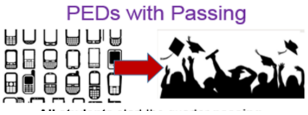
SWBAT

Identify forces and factors involved with friction

Sep 4-7:31 AM

Welcome!!!

SECA CP Physics
Thursday 10 March 2016



H. Leslie Grebe
Room C-244

Centering (music)

$2?

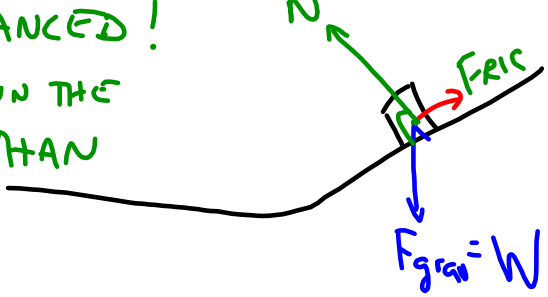
- Show me SchoolView if you want phone in class...
- VECTOR ADDITION due TODAY!!!

NEW HOMEWORK: Pg 73 & worksheet DUE MONDAY
http://www.flippingphysics.com/second-law.html

Opening Activity - Quick Write:

(Page 70/71) When will something slide down a ramp and when won't it? Use forces / arrows in your answer UNBALANCED!

WHEN F_{GRAV} DOWN THE RAMP IS BIGGER THAN F_{FRIC}



Sep 7-7:04 AM

What we should have solid:

Memorize our ~~5~~ 8 vocab cards, units, vector or not, definition, formula

Be able to answer distance vs displacement questions

Be able to make measurements of real-life motion. Know what is likely to make timing things difficult and how to get more reliable timing results

Be able to convert between miles and meters, between hours, minutes, and seconds

Be able to calculate speed = dist/time and velocity = disp/time

Know what all of the symbols in the UAM equations stand for and mean

Be able to turn a UAM word problem into a list of knowns and unknowns

Be able to pick the equation with those 4 things in it

Be able to put the knowns into that equation

(Be able to solve for the unknown)

→ PROJECTILES: V_x IS CONSTANT; V_y CHANGES; $a_y = -9.8 m/s^2$ PG 42

PG 43 TIME, Δt, CONNECTS X & y

PG 49 VECTORS INTO X & y, ADD VECTORS

SOH -CAH -TOA

PG 59 DIFFERENCE BETWEEN MASS & WEIGHT

PG 61 NET FORCE

PG 63 FREE BODY DIAGRAMS

$F = m \cdot a$

QW every day to review - gather responses to front board.

Dec 4-9:15 AM

InterActive Notebook - Table of Contents

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Sep 5-9:09 AM

Pg 71

Normal Force and Gravity...

(PERPENDICULAR)

Newton's 1st Law: OBJECTS TEND TO KEEP DOING WHAT THEY WERE DOING UNLESS ACTED UPON BY A FORCE

Dropped straight down: F_{GRAV} ↓

Board at 90° $F_{FRIC} > 0$?

LANDED RIGHT UNDER WHERE LET GO

Board at 0° F_{NORMAL} ↑ F_{GRAV} ↓ NO FRIC

Board at 80° F_{GRAV} ↓ F_{NORMAL} ? F_{FRIC} ?

THE BOARD PUSHED THE PILLOW SIDEWAYS SOME...

Board at 10° F_{GRAV} ↓ F_{FRIC} → F_{NORMAL} ↑

Board at 45°

$F_{gravity}$ ↓ $F_{friction}$ ↗ F_{normal} ↑

Application? CONSTRUCTION, MOVERS FIRE FIGHTERS (LADDERS, ROPES), X GAME

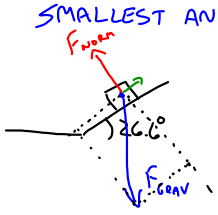
SUMMARY: GRAVITY ALWAYS POINTS STRAIGHT DOWN (CENTER OF EARTH).
NORMAL FORCE ALWAYS STRAIGHT OUT (⊥) FROM THE BOARD
FRICTION FORCE (AGAINST MOTION) ALWAYS UP ALONG THE BOARD
NORMAL & FRICTION HAVE MORE OR LESS SIZE DEPENDING ON ANGLE OF BOARD.

Mar 7-7:53 AM

PG 70 PhET RAMP! SLIDING

TRIAL #1 CRATE $m = 100kg$ ON EARTH $g = 9.8 m/s^2$
POSITION 4m
STARTING ANGLE 10°

SMALLEST ANGLE IT MOVES....



26.6°

NOT MOVING ⇒ FORCES ARE BALANCED

$F_{GRAV} = W = m \cdot g$

NO FRICTION (ICE) ANY ANGLE MAKES IT MOVE $\mu_s = 0$

MASS	ANGLE
200kg	26.5ish6°
50kg	26.6°
20kg	26.6°

GRAVITY (m/s^2)	ANGLE
24.7	26.6°
4	26.6°
30	26.6°

$\mu_s = .5 \sim 26.6°$ ANGLE

$\mu_s = .3 \sim 15°$

$\mu_s = .7 \sim 35.0°$

μ ↑ MEANS ANGLE ↑

$F_{FRIC} = \mu F_{NORM}$

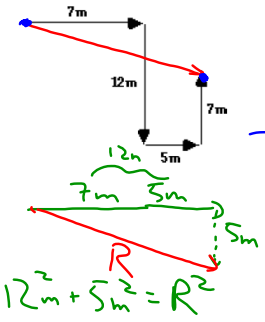
"FUN"

$F = \mu N$

Mar 8-10:07 AM

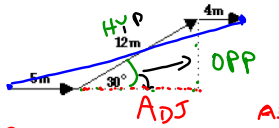
PG 69

Vector examples:



$12_m^2 + 5_m^2 = R^2$

x	y
+7m	+7m
+5m	-12m
12m	-5m



x	y
+5m	OPP = +6m
+4m	
ADJ = 10.49m	
+19.49m	+6m

CAH

$R\cos 30^\circ = \frac{ADJ}{12m} \cdot 12m$

SOH

$12m(\sin 30^\circ) = \frac{OPP}{12m} \cdot 12m$

$\sqrt{R^2} = 19.49_m^2 + 6_m^2$

$= \sqrt{415.8_{m^2}}$

$R = 20.4m$

Mar 4-8:59 AM

Mar 7-10:11 AM